NIDA 500 OPERATION

CF351K03-01

RISK ASSESSMENT: *Low*

SAFETY CONSIDERATIONS:

Electrical Shock Hazard

Electrostatic Discharge

ENVIRONMENTAL CONSIDERATIONS:

None

TERMINAL LEARNING OBJECTIVE

ACTION: Operate the NIDA 500 Microprocessor Trainer.

CONDITIONS: Given a classroom environment, Computer Aided Instruction (CAI), workstation, and official OMEMS reference material.

STANDARDS: Correctly answer 18 of 25 questions on the NIDA 500 microprocessor trainer.

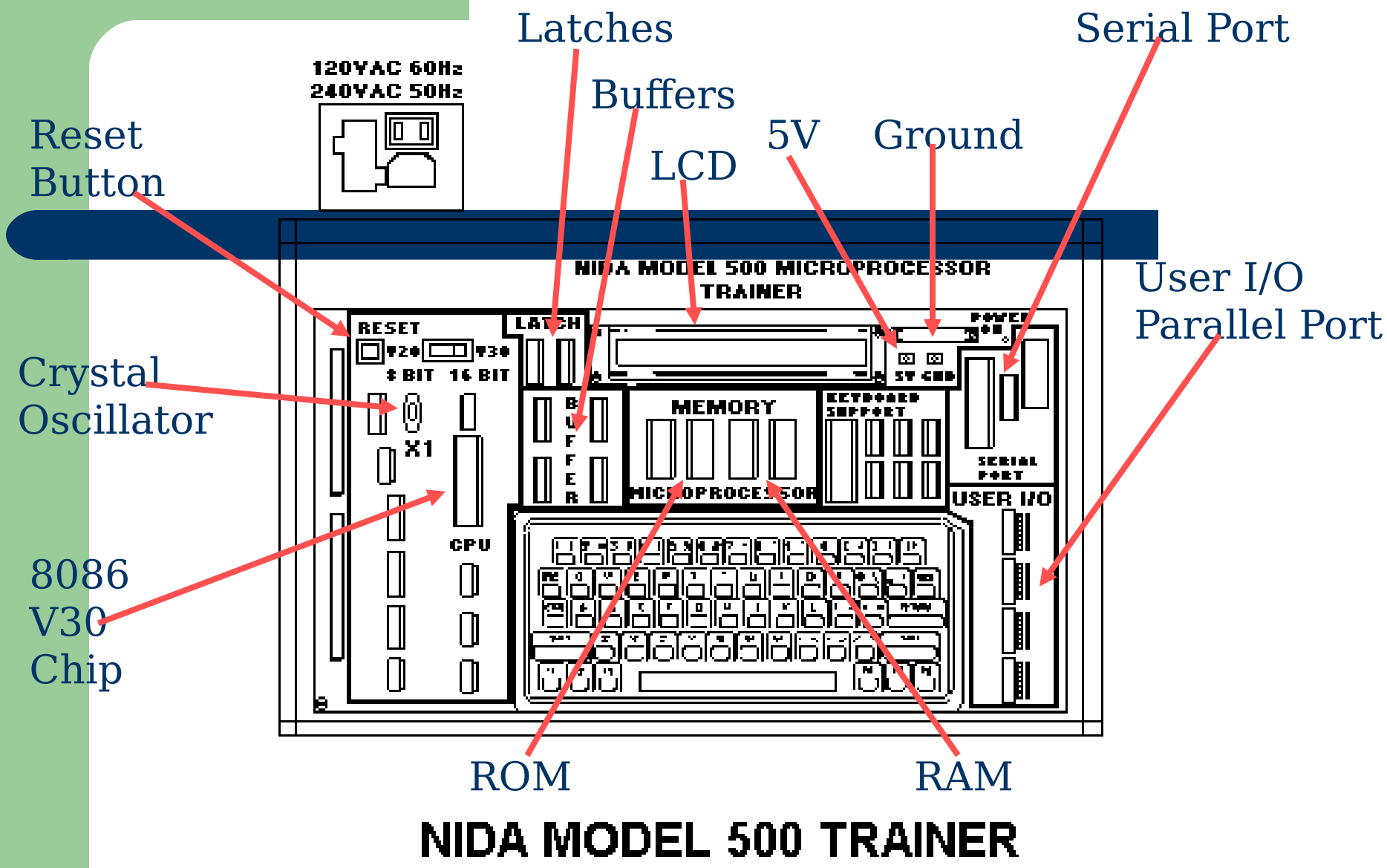
CF351K03-

Enabling Learning Objective

ACTION: Identify microcomputer hardware components.

CONDITIONS: Given a classroom environment, Computer Aided Instruction (CAI), workstation, and official OMEMS reference material.

STANDARDS: Correctly answer 18 of 25 questions on the NIDA 500 microprocessor trainer.


Latches
Serial Port
Buffers
Reset Button
5V
Ground
LCD
User I/O Parallel Port
Crystal Oscillator
8086 V30 Chip
ROM
RAM
120VAC 60Hz
240VAC 50Hz
NIDA MODEL 500 MICROPROCESSOR TRAINER
RESET
LATCH
8 BIT
16 BIT
X1
CPU
BUFFER
MEMORY
MICROPROCESSOR
KEYBOARD SUPPORT
SERIAL PORT
USER I/O
NIDA MODEL 500 TRAINER

Enabling Learning Objective

ACTION: Insert Action.

CONDITIONS: Given a classroom environment, Computer Aided Instruction (CAI), workstation, and official OMEMS reference material.

STANDARDS: Correctly answer 18 of 25 questions on the NIDA 500 microprocessor trainer.

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MICROPROCESSOR OPERATION

- COLD START (BOOT)
- RESET (WARM BOOT)
- EXCHANGE MODES

COLD START

DEFINED AS: When the microprocessor first boots, an initializing program in ROM is executed. These are the actions it performs:

- Puts system in native mode
- Clears General Purpose Registers
- Sets the Segment Registers to 0080h
- Initializes the Flag Register
- Initializes RAM
- Sets the Instruction Pointer (IP) to 0000h

NIDA 500 TRAINER LCD DISPLAY

- The upper line is the Command Information Line (C.I.L.)
- The bottom line is the Command Line.

RESET (WARM BOOT)

The **Reset** or **Warm Boot** is performed by pressing
the Reset Button.

These are the actions it performs:
-stops the execution of any running program
-does not destroy any program stored in RAM
-all registers are reset to their initial states
-returns the processor to its initial state

EXCHANGE MODES

NIDA - 500 TRAINER

8086> **X**change **M**odes_

Trainer switched to 8080
Emulation Mode

8080> _

NATIVE & EMULATION MODES

MODE	V20 8 BIT	V30 16 BIT
NATIVE	8088	8086
EMULATION	8080	8080

NIDA 500 TRAINER COMMAND FUNCTIONS

COMMAND	FUNCTION
Register	Display or modify the contents of registers.
Display	Display contents of memory.
Examine	Examine or modify contents of memory.
Go	Run Program
Trace	Single step through program.
Breakpoint	Stops the program at a specific point.
Output	Write data to a specified port.
Input	Read data from a specified port.

Register Command

Format 1

Used to display register groups one at a time

"**R**" and hit the enter key.

Format 2

Used to display a specific register and it's gr

"**R**", the register and hit the enter key.

Format 3

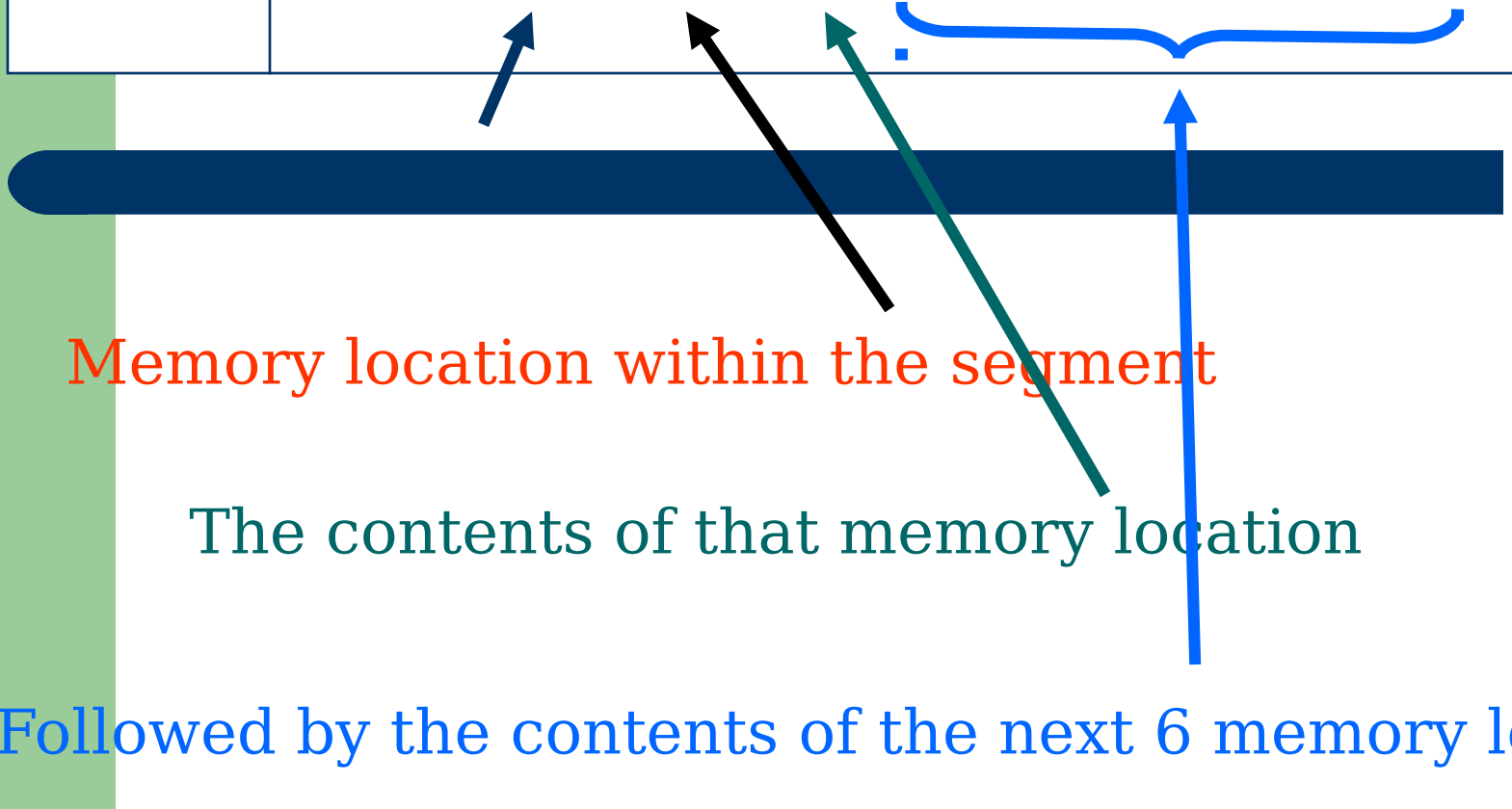
Used to enter data into a specific register.

"**R**", the register, the data and hit the enter k

8086 REGISTER GROUP DISPLAYS

Arithmetic Register Group	**IP**=1000 **AX**=1122 **BX**=BEEF **CX**=DEAD **DX**=000 The IP register appears with all groups.
Control Register Group	IP=1000 BP=5000 SP=7000 SI=5050 DI=50 DS=0080 ES=0080 SS=0080 CS=0 OF DF IF SF ZF AF PF CF FL=

Display	**Format: D xxxx** **C.I.L: 0080:XXXX, XX, XX, XX, XX, XX, XX, XX a.a.a**



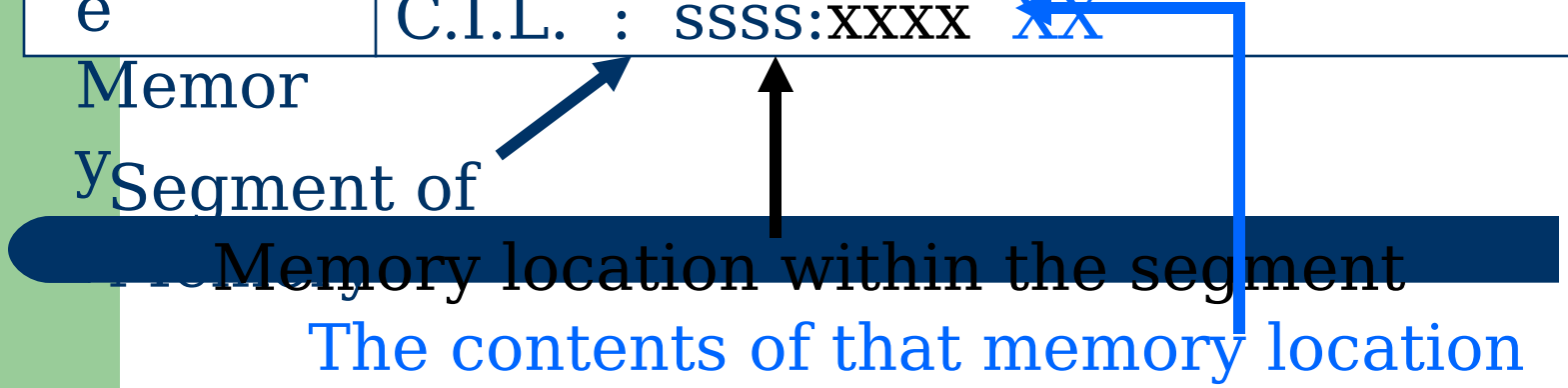
Memory location within the segment

The contents of that memory location

Followed by the contents of the next 6 memory locations

And the ASCII equivalents of the contents in the

Examine Memory	Format 1: E xxxx C.I.L. : ssss:xxxx XX



Modify Memory	Format 2: E xxxx XX

If Return is pressed the data will be entered in that one lo
If the Space Bar is pressed data will be entered in that loc
and the processor increments to the next memory location
data input.

GO	Format: G 1000 Starting location of a program

TRACE	Format: T 2000 Starting location of a program
NOTE	The Trace command is good for Troubleshooting Hardware and Software.

Breakpoint Command

Format 1: “B” Used to view the Breakpoints already ent

Format 2: “B 1 2300” Used to enter Breakpoints at a spe

Format 3: “B 1 +” Used to enable a specific Breakpoint

Format 4: “B 1 -” Used to disable a specific Breakpoin

There are 8 possible Breakpoints from 0 - 7.

Input/Output Commands

Input Command	Format:	“I 70” Inputs the low byte of the p “I 71” Inputs the high byte of the
Any signal that is connected to the port will be read by th		
Output Command	Format:	“O 70 FF” Outputs “FF” to the low of the port. “O 71 FF” Outputs “FF” to the hig of the port.

Enabling Learning Objective

ACTION: Operate the Nida Model 500 Microprocessor Trainer .

CONDITIONS: Given a classroom environment, Computer Aided Instruction (CAI), workstation, and official OMEMS reference material.

STANDARDS: Correctly answer 18 of 25 questions on the NIDA 500 microprocessor trainer.

SUMMARY

- IDENTIFY HARDWARE COMPONENTS AND KEY COMMANDS OF NIDA 500
- MODES OF OPERATION OF NIDA 500
- COLD START (PWR UP) / WARM BOOT (RESET)